

CLAIMS

WHAT IS CLAIMED IS:

1. A method of testing a planar lightwave circuit comprising:
 - creating a first probe region of a top surface of the planar lightwave circuit by removing a portion of cladding from the top surface of the planar lightwave circuit;
 - coupling a first optical probe to the first probe region; and
 - testing an optical pathway within the planar lightwave circuit by transmitting or receiving light through the first optical probe.
2. The method of claim 1 further comprising:
 - creating a second probe region of the top surface of the planar lightwave circuit;
 - coupling a second optical probe to the second probe region; and
 - using the second optical probe in combination with the first optical probe to send and receive a light signal through the planar lightwave circuit.
3. The method of claim 2 further comprising:
 - changing an input angle of the light signal to test a second optical pathway within the planar lightwave circuit without moving the first optical probe or the second optical probe.

1 4. The method of claim 1 further comprising:
2 using an index-matching fluid as an interface between the first optical probe
3 and the first probe region.

1 5. The method of claim 1 further comprising:
2 removing the first probe region from the planar lightwave circuit.

1 6. The method of claim 1 further comprising:
2 filling in the first probe region from the planar lightwave circuit with index-
3 matching fluid.

1 7. A method of testing a planar lightwave circuit having first and second surface
2 regions, the first and second surface regions having an upper cladding thickness of
3 approximately 2 microns or less, the method comprising:
4 coupling a first optical probe to the first surface region;
5 directing light through the first optical probe into the planar lightwave
6 circuit;
7 coupling a second optical probe to the second surface region; and
8 receiving the light through the second optical probe.

1 8. The method of claim 7, wherein at least one of the first and second surface
2 regions is near an edge of a planar lightwave circuit die.

1 16. An optical probe comprising:
2 a prism having a rounded top; and
3 a first waveguide in a bottom portion of the prism, the rounded top to focus
4 light entering the prism into first waveguide.

1 17. The optical probe of claim 16, wherein the prism is at least partially made of
2 sapphire, high density glass, LiNbO₃, or rutile.

1 18. The optical probe of claim 16, further comprising:
2 a second waveguide in the bottom portion of the prism, wherein the rounded
3 top constitutes more than one focus to couple light into the first
4 waveguide and the second waveguide.

1 19. The optical probe of claim 16, wherein light entering the rounded top is re-
2 directed approximately 90 degrees by the prism and the first waveguide.

1 20. The optical probe of claim 16, wherein the rounded top comprises a microlens
2 array.

1 21. A method of making an optical probe, the method comprising:
2 forming a lens surface on a prism; and
3 forming a waveguide in a bottom portion of the prism.

1 22. The method of claim 21, wherein the waveguide is formed by diffusion or ion
2 exchange.

1 23. The method of claim 21, wherein the waveguide is formed by ion
2 implantation.

1 24. The method of claim 21, wherein the waveguide is formed by deposition.

1 25. The method of claim 21 further comprising:
2 forming a second waveguide in the bottom portion of the prism.

1 26. The method of claim 21, wherein forming the lens surface on the prism
2 further comprises
3 forming a lens surface having more than one focus.

1 27. The method of claim 21, wherein forming the lens surface on the prism
2 further comprises
3 forming a lens surface having a microlens array.